

# Chemical Energy and ATP

Energy comes in many forms including light, heat, and electricity.



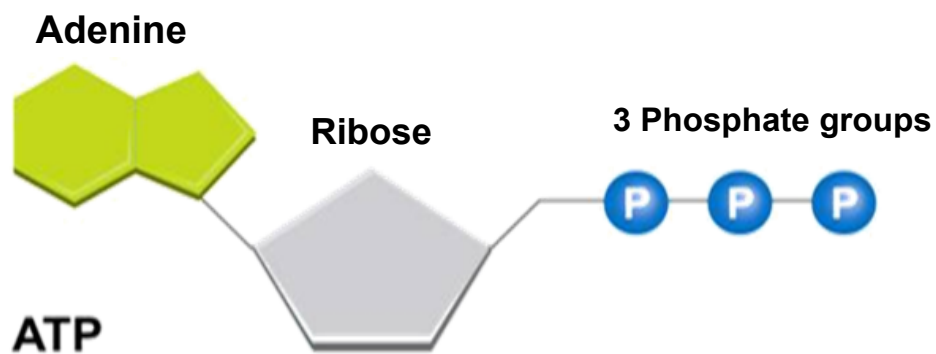
Energy can be stored in chemical compounds, too.

An important chemical compound that cells use to store and release energy is **adenosine triphosphate**, abbreviated **ATP**.

ATP is used by all types of cells as their basic energy source.

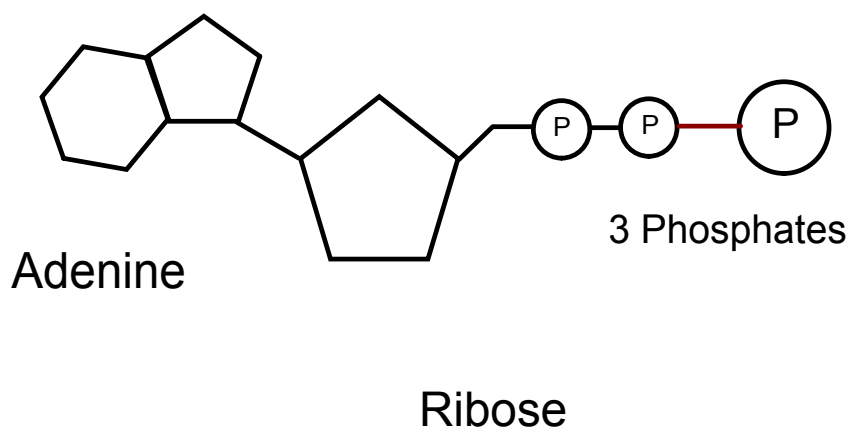
ATP consists of:

- adenine
- ribose (a 5-carbon sugar)
- 3 phosphate groups

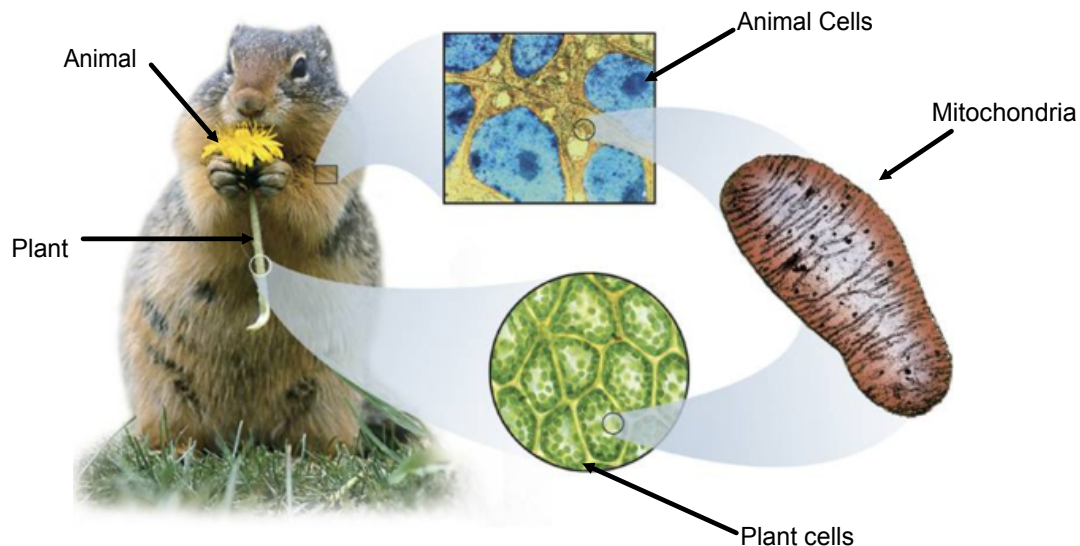


ATP= Energy (chemical)

The three phosphate groups are the key to ATP's ability to store and release energy.



Food serves as a source of raw materials for the cells in the body and as a source of energy.



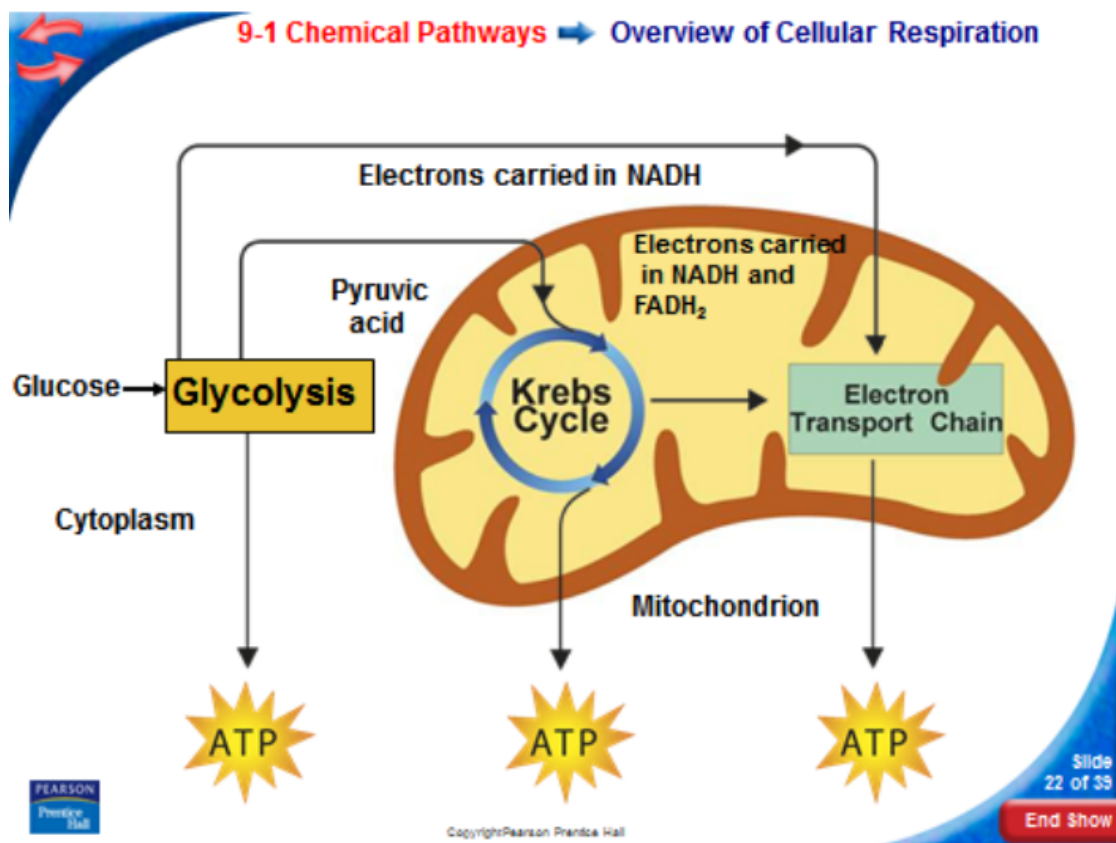
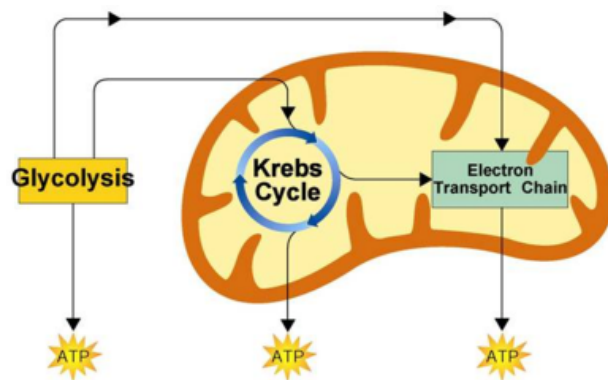
Cells gradually release the energy from glucose and other food compounds.

This process begins with a pathway called **glycolysis**.

Glycolysis releases a small amount of energy.

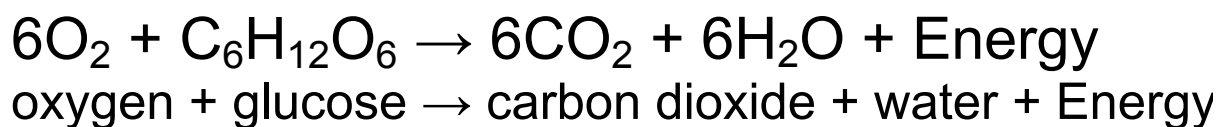
If oxygen is present, glycolysis is followed by the Krebs cycle and the electron transport chain.

Glycolysis, the Krebs cycle, and the electron transport chain make up a process called **cellular respiration**.



**Cellular respiration is the process that releases energy by breaking down glucose and other food molecules in the presence of oxygen**

The equation for cellular respiration is:



Glycolysis takes place in the cytoplasm. The Krebs cycle and electron transport take place in the mitochondria.

